distribution, poisonous properties, food value, and other noteworthy items not usually referred to in botanical manuals.

The Handbook includes a brief history of early botanical explorations in North Dakota. Also included under general information are maps of the State showing the counties and principal cities, the chief physical features, and sixteen outline maps of the State showing typical plant associations and species distributions.

The author has treated species and species names conservatively. For example, all of the genus *Amelanchier* is included under the single species, *A. alnifolia* Nutt., even though other authorities at times have described North Dakota material under several additional species names. In cases of this type, where the author has had a wide personal field acquaintance with the native material and could not establish the presence of fundamental taxonomic differences, he has generally avoided the separation into additional species.

The figures are of excellent quality and were largely photographed, or, in the case of line drawings, drawn specifically to serve a certain purpose in the Handbook. The binding, paper, and printing are of good quality, and the text is quite free of typographical errors. It includes descriptions of 1143 species and 102 families.

The student and teacher will find informative suggestions on the use of keys. The general key to families is supplemented with 82 carefully chosen line drawings that are printed in the margin of the key. Due to the limited number of genera, the keys to the species usually follow the general description of the family. A single key may be used for the genera and species in a family, especially if the genera include only a few species. This may result in slight confusion to those who are accustomed to having separate keys for genera and species.

The Handbook is intended for use in studying a rather limited flora which includes part of the transition zone between the eastern woodland flora and the grassland flora of the Plains. Within its proper range it is an exceptionally useful volume to the amateur and professional alike. Joseph H. Schultz, Department of Horticulture, North Dakota Agricultural College, Fargo, North Dakota.

*Flora of the Charleston Mountains, Clark County, Nevada.* By Ira W. Clokey. University of California Publications in Botany, vol. 24, vi + 274 pp., map. 1951. University of California Press, Berkeley and Los Angeles. $2.75 (paper), $3.75 (cloth).

Intensive study of the vegetation of restricted areas is a phase of botanical activity too often neglected. Concentration on a limited field enables an observer to acquire a deeper and more accurate view of the variability, ecological requirements,

relative abundance and seasonal behavior of his species than is otherwise possible. It is upon such observation, especially when backed up, as in this case, by an exceptionally ample and widely distributed herbarium record, that a picture of larger and more natural floristic regions can be built up. In this respect, apart from its intrinsic merit, the Flora of the Charleston Mountains will be welcomed and valued as an important step towards an understanding of the Intermountain and Desert floras, inasmuch as the range lies at or near the point where the Mojavean and Great Basin floras meet and overlap.

The Charleston Mountains, as delimited for the purpose of the Flora, cover an area estimated at some 650 square miles lying just west of the California line in Clark County, Nevada, and extend from the base of the foothills at about 1000 meters to the summit peak at 3630 meters. The periphery is and can be only vaguely defined, but it embraces the alluvial fans enclosed by outlying spurs, while the adjacent valley-floors (and thereby such species as *Arctomecon californica, Phacelia Parishii,* etc.) are excluded. It should be noted that the otherwise serviceable map is not exactly coextensive with the area covered, Indian Springs, for example, repeatedly mentioned in the text and an important type-locality, lying beyond its northeastern limit. The broken nature of the terrain, especially of the abrupt eastern escarpment, with its hot desert valleys, cliffs, box-canyons and, upward, the cooler but still largely arid pine-forests, aspen-groves and finally a small area above timber-line, provides a great variety of habitats, and the flora is rich and remarkable. Clokey enumerates 699 ferns and seed-plants from the Charlestons, and states his belief that the list is at least 80 per cent complete. This strikes the reviewer as a modest estimate. Certainly we may expect here several species known from a few miles outside the limits of the Flora (such as *Selinocarpus diffusus, Mortonia utahensis, Astragalus sabulonum, Coldenia Nuttallii, Nama pusillum, Salvia mohavensis,* to name a few), some that occur on both sides of the range *(Phacelia geraniifolia)* and others new or surprising, but hardly so great an increase as 20 per cent (between 80 and 90). The number is in any case impressive. No comparable figure for a range in the interior is available, but we may contrast it with the 761 taxa, as given by Sharsmith (Am. Midl. Nat. 34:289–367. 1945), in the Mount Hamilton Range in California, an area twice as great though physiographically less varied. Special interest attaches to the large endemic element of 31 taxa (or about 4.5 per cent), some of them taxonomically isolated, though we may expect this total to be somewhat reduced as the calcareous mountains of central Nevada become better known.

The plan of the Flora follows closely that adopted by Kearney and Peebles for their Flowering Plants and Ferns of

Arizona, a model hardly to be improved upon where space forbids individual specific descriptions. The main body of the work consists of an annotated list, with excellent keys to the families, genera, and, when more than one, to the species. Each genus is described briefly, and under the specific heading, following a rather full synonymy and quotation of type-locality, all known collections of the species from the Charlestons are recorded, with a general statement of its frequency there, its altitudinal limits, extralimital range, and other pertinent data. Note is taken in each case of the species' association with one or more of eleven woody plants used as zonal indicators, the Merriam life-zones being too feebly or erratically expressed to be of much service in the Charleston Mountains. The principal indicators are creosote-bush, sagebrush, Utah juniper, pinyon, and the yellow, limber and bristlecone pines. Although the Peak rises beyond the limit of trees, there is no truly alpine flora.

The descriptive text is preceded by a short but informative outline of the region's geological history (contributed by Chester R. Longwell), forming a background against which the diverse origins of the vegetation can be to some measure understood. Concise notes on the physiography of the area, the climate, and a highly interesting list of the strictly endemic and near-endemic species are provided. The entire flora and the endemic element are analysed according to the approximate zone of occurrence and their floristic relationships, and it is brought out that middle elevations in the Charlestons, corresponding roughly with the pinyon-juniper and yellow-pine forests, are richest by far in number of species, while the relationship of the majority is with the Great Basin, broadly interpreted. However, far northern, Mexican, Rocky Mountain and Sierran elements are more or less strongly represented, and it becomes clear that the Charleston Mountains have provided both a sanctuary for the preservation of relics from floras once more widespread and, by reason of their long isolation, a theatre for the evolution of new forms. This combination makes the region of the highest interest to phytogeographers.

During the preparation of the Flora, Clokey corresponded widely with fellow-botanists, seeking advice and determinations from specialists wherever possible. The treatments of several families or genera were contributed by acknowledged authorities, and no effort was spared to bring the nomenclature into line with the best current usage. This is no mere compilation, however. Each determination by others passed before the keen and sceptical scrutiny of the author, and his personal viewpoint is vigorously stated in discussion of particular problems of identity or taxonomic status. The conservative view of the species is uniformly that of Clokey himself. Many groups

were, of course, worked up by the author himself, as attested by a series of six preliminary papers published, largely in this journal, between 1937 and 1945. These stand as evidence of the sound original research on which the Flora is based.

The Flora of the Charleston Mountains appeared posthumously under the able editorial guidance of botanists at the University of California, Berkeley, where the Clokey Herbarium, upon which the work so largely rests, is housed. We cannot but regret that the author did not live to experience the pleasure of turning the pages of this handsome volume upon which he worked long and arduously in the face of failing health, and upon the publication of which, as the principal achievement of a lifetime devoted to botany, he placed great store. We can be sure, however, that this work, a significant advance in the documentation of the western flora, will prove an enduring memorial to the labors of a gifted botanist. Rupert C. Barneby, Wappingers Falls, New York.

## NOTES AND NEWS

Jeffrey Pine in the South Coast Ranges of California. Jeffrey pine has been reported locally in California in the South Coast Ranges as far north as the mountains near San Luis Obispo, in the San Bernardino and San Jacinto mountains and southward into the San Pedro Martir Range in Baja California, Mexico. This species is most common and important in the Sierra Nevada, localized on the western slopes of the range and commonly forming pure stands on the eastern slopes. Jeffrey pine also occurs in the northern Coast Ranges, in Mendocino and Humboldt counties, usually being restricted to serpentine outcrops. Although the presence of this species here is not too well publicized, it has been mapped by members of the Forest Survey (California Forest and Range Experiment Station). Samples obtained by Paul Zinke of the Forest Survey show that Jeffrey pine from the northern Coast Range has characters similar to Jeffrey pine from other areas.

During a recent study of the natural hybrid between *P. Jeffreyi* Grev. and Balf. and *P. Coulteri* Lamb., two small populations of Jeffrey pine, totaling several hundred trees, were found on Chew's Ridge in the northern Santa Lucia Mountains in the Los Padres National Forest, Monterey County, California. These populations are at 5,000 feet elevation, on the ridge top both to the north and southwest of the Chew's Ridge lookout tower. This locality is approximately 100 miles north of the San Luis Obispo County Jeffrey pine occurrence. When the study was undertaken, Jeffrey pine was not known to occur in the Chew's Ridge region; at least, no reference could be found in the literature, and no one with whom the writer